

THE Signal

Bimonthly Publication of the Society of Broadcast Engineers



The Association for Broadcast and Multimedia Professionals

www.sbe.org

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Annual Membership Meeting To Be Webcast

The SBE Annual Membership Meeting will be webcast live from 5 to 6 p.m. ET, Wednesday, Oct. 14. The event is part of the 2015 SBE National Meeting held at the Madison Marriott West Hotel in Middleton,

Members not able to attend the national meeting can watch a live stream of the Membership Meeting. A link will be posted on the SBE website. The webcast is sponsored by AC Video Systems, Blackmagic Design and Ross Video. The Membership Meeting will include comments from outgoing SBE national President Joe Snelson, CPBE, 8-VSB, recognition of the 40th anniversary of the SBE Program of Certification, brief reports on issues of interest

to members, and the induction of the newly elected president, officers and directors of the SBE national board of directors. Last year, more than 400 SBE members viewed the Membership Meeting, which is archived on the SBE website.

The Broadcasters Clinic is one of the longest-running broadcast industry educational events in the country. It spans three days and includes speakers on technical and regulatory topics, an equipment and services trade show and opportunities to meet and renew friendships with other broadcast engineers from the Upper Midwest region. The SBE National Meeting begins on Tuesday, Oct. 13, and, in addition to the Annual Membership Meeting, includes a meeting of the national SBE Certification Committee, the fall meeting of the SBE Board of Directors, the annual SBE Fellows Breakfast (by invitation only) and the SBE National Awards Reception and Dinner. Our thanks to this year's dinner sponsor, The Telos Alliance, and to our reception sponsor, Ross Video.



President Joe Snelson speaks at the 2014 National Meeting.

WI, and is being held in conjunction with the Broadcasters Clinic, presented by the Wisconsin Broadcasters Association and the SBE chapters of Wisconsin.



The 2015 Membership Meeting will be streamed live again.

Registration for the Wisconsin Broadcasters Clinic is available through the WBA website, www.wi-broadcasters.com. Registration includes all National Meeting events except the Awards Reception and Dinner. Tickets for that may be ordered at the SBE website, www.sbe.org, for just \$15 each.

SBE Announces National Award Winners

The 2015 SBE National Awards, which recognize excellence from and achievement of individual members, SBE chapters and Sustaining Member companies, have been announced. The two highest individual awards are the Robert W. Flanders SBE Engineer of the Year and the James C. Wulliman SBE Educator of the Year.

The Robert W. Flanders SBE Engineer of the Year award is presented to a member who has excelled in his or her career while furthering the mission of the SBE. Candidates are nominated by their peers. Winner of the award for 2015 is Roswell D. Clark,



Clark

CPBE, CBNT, of Clearwater, FL. Clark is a former SBE Chapter 39 chair, and currently serves as the chapter treasurer.

The recipient of the James C. Wulliman SBE Educator of the Year award is recognized for outstanding service and excellence in sharing knowledge through teaching other broadcast engineers. The winner of the 2015 award is Chapter 39 Tampa Bay, FL, which began hosting an annual day-long technical training seminar in 2009 and has held it every year since.

Roz Clark has worked in broadcast engineering for more than 30 years. Currently, Roz is

the director of technical operations for Cox Media Group in multiple markets. He is also a facilitator of Chapter 39's one-day symposium that provides an educational

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experience for the regional engineers who cannot attend the NAB Show or similar events. Roz was a leader in the implementation of HD Radio and adoption of radio's part in social media and other platforms.

Members of SBE Chapter 39 have produced a one-day educational technical training seminar for the past six years. Various speakers are invited to presentations focused on technology and without a sales pitch. Every seminar brings a mixture of major companies as well as local companies working in the industry at a low cost to attendees. The 2015 Symposium is scheduled for November 12. Chapter members who have been a part of the planning are Roz Clark, Dylan Scott, Larry Stephen, Bill Brown, Paul Kempter, Ralph Beaver, Mike Galik, Jake Tremper, Sheila Cowley, Mike Cernack, John Collinson and the late Steven Hess.

Blackmagic Design is awarded the 2015 SBE Technology Award for its 12G-SDI, which has a high data throughput and allows for SD, HD and Ultra HD video to be sent via a single BNC cable. The increased bandwidth also supports the emerging high frame-rate Ultra HD 60p format.

Chapter and Individual Awards

Chapters are the lifeblood of the SBE, and 2015 marks the third year that the Chapter Engineer of the Year Award has highlighted the achievements of members within their chapters. This year, nine chapters selected their own award recipients. Each winner will be presented with a special certificate and will be recognized



nationally on the SBE website and in a future issue of *The Signal*. The nine chapter winners also were automatically nominated for the national Robert W. Flanders SBE Engineer of the Year Award. The 2015 national winner, Roz Clark, represented Chapter 39 as its Chapter Engineer of the Year Award winner.

The winner of the Best Technical Article, Book or Program for his article in the October and December issues of *The Signal* and an issue of the Chapter 24 newsletter is Tom C. Smith of Sun Prairie, WI, for *Look at TV Repack Scenario*, Chapter 24.

Chapter 80 of Fox Valley, WI, has won the award for Best Chapter Website and Best Social Media Site.

Best Chapter Newsletter tied with Chapter 24, Madison, WI, and Chapter 70, Cleveland, OH.

Chapter 24, Madison, WI, and the 2014 Broadcasters Clinic won for Best Regional Convention or Conference.

Several SBE National Awards recognize

see **AWARDS**, p.8



Certification Question

Answer on page 7

If losses are neglected, which of the following electrical heights of a thin vertical antenna yields the greatest field in the horizontal plane?

- A. 225 degrees
- B. 90 degrees
- C. 135 degrees
- D. 180 degrees



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LETTER FROM THE PRESIDENT

By Joe Snelson, CPBE, 8-VSB
SBE President
jsnelson@sbe.org

Feeling the Heat

I will begin this month's letter with a saying I heard from a co-worker some years ago. "Spring has sprung, fall has fell, summer is here and it's hotter than...usual." However, in this case I'm not giving a weather report. What I am referring to are the activities that have been "cooking" at the SBE. Since my last letter we have been in the heat of it on a number of important regulatory fronts that I want to mention this month.

Affecting both our radio and television members was the announcement of the closing of 16 FCC field offices. This was brought before the SBE Board at the April meeting during the NAB Show. For many members, the local FCC field offices have been instrumental in working with stations to track down and take enforcement action against interferers, such as pirate radio stations. The Board gave direction to SBE General Counsel Chris Imlay to write a letter to the FCC with a copy to all the commissioners and Representative Greg Walden stating our concern about the office closings. We polled the SBE frequency coordinators seeking examples of how local FCC offices assisted in resolving interference issues. When what seemed to be a lull in activity after other organizations filed their comments we submitted our letter. Our letter sparked a lot of interest including a positive comment from one FCC field office staff member. As the issue progressed, several industry organizations were contacted about giving testimony at a House Energy and Commerce Committee hearing regarding the closures. I am pleased to mention that the SBE was given the opportunity to participate, and Chris Imlay was ready to represent us. However, when a compromise was announced by FCC Commissioner Wheeler, the committee hearing was cancelled. While I believe we all wish there would have been no field office closures, I am encouraged that significant concessions were made to mitigate what would have been a very bad situation had the original plan gone forward.

More Regulatory Actions

Recently, the FCC released its Report and Order pertaining to EAS, specifically regarding the national test. This involves requirements on EAS equipment and reporting procedures for a test. You can learn more on this subject on the SBE website. We quickly

released a regulatory alert on this as a part of our EAS education efforts to our members. Be sure your equipment is ready to comply with the new requirements.

The SBE filed with the FCC requesting an extension of the May 26 deadline on what some refer to as the audible crawl for emergency messages placed over programming. SBE Board Member Ted Hand worked with SBE General Counsel Chris Imlay to draft our comments. Those comments can be found on the SBE website under the legislative goals tab (click on the link for SBE filings with the FCC). We were pleased that the FCC granted the extension request filed by the SBE and other organizations. TV members: Don't wait until the last minute to implement this into your facility. The six-month time clock is ticking and will be up before you know it. Do not expect another extension from the FCC on this.

We issued a regulatory alert for our television members to check the accuracy of their technical facilities. This concerned the completion of FCC Form 2100, Schedule 381 as a part of the 600MHz spectrum repacking and auction initiative. This triggered something in my mind that is important for all radio and television stations to check. If you haven't carefully reviewed all authorizations for technical accuracy lately I would encourage you to do so. This includes the main station authorization and auxiliary authorizations such as studio-to-transmitter links, intercity relays, aural and TV remote pickup. Ensure all fixed receive sites show on the authorization. In this day where it seems the FCC is opening all the BAS bands for sharing it is crucial that all information on the authorizations is accurate and shows all fixed receive sites. Failure to do this could result in receiving interference from another user with no recourse other than living with the interference.

Publications

On the education front, our new publication, *TV Master Control: A Handbook of Technical Operations*, co-authored by Fred Baumgartner and Nick Grbac, is now available. This is an advanced and more detailed book regarding television master-control operations. I appreciate Fred and Nick donating their time and effort in authoring this book for the SBE.



Another publication, *SBE Broadcast Engineering Handbook – Hands-on Guide to Station Design and Maintenance*, is well under way and will be available Jan. 1, 2016. Work is progressing with most all of the authors having submitted their contributions. This will be an excellent reference text for both radio and television members and will be a great addition to your reference library. Be sure to get yours when it becomes available.

I am out of space for this month. As you can see it has indeed been a "hot" summer for the SBE in terms of activities and I have touched on only a few of them.

In closing, if you are able to attend our national meeting on October 14 in Madison, WI, in conjunction with the Wisconsin Broadcasters Association Broadcasters Clinic, we look forward to seeing you there. If you can't attend in person we will once again make our annual membership meeting available by webcast. One way or another, we'll see you then.

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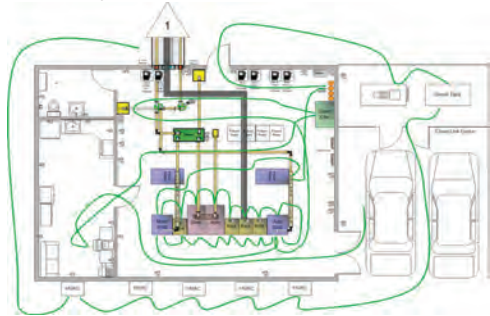
EDUCATION UPDATE

By Steve Fluker, CBT
Senior Engineer, Cox Media Group; Member, SBE Educaiotn Committee
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Transmitter Site Maintenance: Often Forgotten

Our transmitter sites are a critical part of our broadcast operations. Unfortunately, with heavy workloads and high demands for our time at the studio and office locations, transmitter sites can be neglected for months at a time. No matter how perfect your studio maintenance, a major transmitter site failure means you're off the air, and you're out of business.

On June 18, I presented an SBE webinar that stressed the importance of regular trips to a tower site. This is a recap and summary of some of that information.



Arrange log forms to walk you through and around the entire building.

First, create a set of logs for the major equipment at the site. This includes the transmitter, generator, STLs, transmission line pressure, and more. Arrange the logs in a way that forces you to walk around the entire building, both inside and out. Include all the major equipment and every status indicator so you are sure to check them.

- **Transmitter.** Most transmitters have several meters on the front. Include all these readings on your logs. If your transmitter has a computer monitoring system you may have too many readings to write down. In this case, find a couple of key items on each tab of readings so you can notice any alarms on those pages.

By taking these readings you will get to know the normal operating parameters of your transmitter and detect changes that could indicate an upcoming failure before it happens.

- **Generator.** Even if your generator has a timer and exercises itself weekly, it's still a good idea to run it while you're onsite. Listen to be sure it starts strong and fast. Check the status lights on the transfer pan-

el after starting to be sure the emergency power is available. If it's not lit, check the main generator breaker or call for service. Generators should be serviced by a qualified service company at least once or twice a year. And transfer the entire building load at least once per quarter.

- **Transmission Line Pressure.** Most higher-power radio and television stations use pressurized transmission lines. It is important to check the line pressure on every visit. You should also install a pressure sensor to provide a remote alarm should the pressure drop. Tap mechanical gauges to ensure they're not stuck. Log all the gauge readings, such as line pressure and tank pressure.

- **Tower Inspection.** Whether you own the tower or lease space on it, it's important to visually inspect it. Don't just assume that the tower owner will catch problems. If your company owns the tower, you have the sole responsibility to inspect and maintain it.

You must perform quarterly tower inspections. This is a visual inspection and does not require climbing. This inspection includes a visual check of tower lights, the base of the tower, and all guy wire anchors. Use binoculars to check antennas and

lines. Look for potential problems such as rust, cracks in cement foundations, missing signage, loose transmission lines, and vegetation growth. Repair, correct or at least log any problems.

Finally, ensure fences are secure and in good condition. While fencing is strongly recommended, it is only a legal requirement for AM towers, or any site that has elevated RFR levels on the ground.

It is also a good practice to hire a tower crew annually for a full climb and inspection. They can correct any identified issues.

- **General Maintenance.** The HVAC units at a tower site get a rough workout, usually running 24/7/365. Sign a service contract with a local air conditioner company for routine maintenance.

It can be difficult to find a good company to mow the grass and field around the tower, but it's very important. Overgrown areas around a tower and guy anchors can be dangerous and even bring a tower down.

It takes regular visits to all tower sites to keep them running properly and efficiently.

WEBINAR ON DEMAND

The June 18 SBE webinar *Transmitter Maintenance Checklist* can be viewed on demand at sbe.org/webinars.

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For more information on any SBE education program, contact Education Director Kristin Owens: kowens@sbe.org or 317-846-9000.



CERTIFICATION UPDATE

By Doug Garlinger, CPBE, 8-VSB, CBNT
Member, SBE Certification Committee
doug@garlinger.com

Make the Choice for Certification

2015 marks the 40th anniversary of the SBE Program of Certification

We all have highly qualified colleagues who are not SBE Certified. Perhaps you are one of those engineers. After 40 years, the SBE Certification Committee has heard a lot of reasons why the choice for Certification has not been made. We've compiled some of those "excuses" and offer some thoughts for you to consider.

• **I don't have the time.**

There is an old adage "If you want something done, ask a busy person." We're all busy in broadcast engineering. Certifications are based on your actual experience and the challenges you face every day. You already know the answers to most of the questions. You're allotted three hours to complete the engineering-level tests, and the exams are open book. We offer five different exam dates throughout the year, and we can likely accommodate you if those dates don't work.

• **The application is too complicated.**

You know how to wade through an equipment manual, perform complex configurations, and complete an FCC filing. You can easily complete the SBE application form. It only takes a few minutes.

• **I have to renew it every five years.**

This is good, because it demonstrates that you are staying current with constantly changing technology. It is easy to accrue recertification points through the normal course of your work and successful participation in broadcast engineering. You can take the exam again, but that is rarely necessary if you are active in your profession.

• **I shouldn't have to take a test (at my age or with my experience).**

You may feel that you do not need to prove anything to anyone; you are wrong! We need to prove ourselves every day to secure our futures. SBE Certification is

an indicator of competence to your colleagues, and your present or potential employer. If you consider yourself as one who performs broadcast engineering work professionally, then it only makes sense that your professional abilities should be certified by the only professional society that understands your trade well enough to test and certify your professional broadcast engineering skills.

• **I don't need it for my job.**

You may not need it in your current circumstance, but circumstances change. Certification could make the difference in a management lay-off or new-hire decision. Even if you plan to retire, it could make the difference in picking up some part-time broadcast engineering employment in your market or in the market where you plan to retire, where no one knows you or the station you previously worked.

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Certified Professional Broadcast Engineers® and certified senior broadcast engineers who have maintained SBE certification continuously for 20 years, are at least 59½ years old and are current members of the SBE may be granted Life Certification if so requested. All certified who have retired from regular full-time employment and are at least 59½ years old may be granted Life Certification if they so request. If the request is approved, the person will continue in his/her current level of certification for life.

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Thomas Gray, Humble, TX - Chapter 105
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Applicant must have had 20 years of professional broadcast engineering or related technologies experience in radio and/or television. The candidate must be currently certified as a Certified Senior Broadcast Engineer®.

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Andrew reinoso, North Hollywood, CA
Kyri Smith, Burbank, CA
Davis Surya, Los Angeles, CA
Michael Yilmaz, Los Angeles, CA

RECERTIFICATION

The following applicants completed the recertification process either by re-examination, point verification through the local chapters and national Certification Committee approval and/or met the service requirement.

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Laurence Wood, Berkeley, CA - Chapter 40
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Thomas Ray, III, New Windsor, NY - Chapter 15
Certified Senior Radio Engineer (CSRE®) 8-VSB Specialist™ (8-VSB™)
Joe Stack, East Windsor, NJ - Chapter 15
Certified Senior Radio Engineer™ (CSRE®)
Donald Smith, Raleigh, NC - Chapter 93
Certified Senior Television Engineer™ (CSTE®)
Perry Kuhns, Pearland, TX - Chapter 105
Certified Broadcast Radio Television Engineer™ (CBRTE™)
Leon Amstutz, Upland, IN - Chapter 30
Certified Broadcast Radio Engineer™ (CBRE®)
Paul Jonak, Moreno Valley, CA - Chapter 131

Certified Broadcast Television Engineer™ (CBTE®)
Patrick Jones, Orlando, FL - Chapter 42
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Michael Galik, Dunedin, FL - Chapter 39
Certified Video Engineer® (CEV®)
Michael Graziano, Suffield, CT - Chapter 14
Dan Stark, Lenexa, KS - Chapter 59
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Blaine Hackbarth, South Milwaukee, WI - Chapter 28
Benjamin Manierre, Jr., Thousand Palms, CA - Chapter 47
William Mixer, Hanover, PA - Chapter 41
James Paluzzi, Tempe, AZ - Chapter 9
Dale Pendleton, Raleigh, NC - Chapter 93
Bart Schrum, Odenton, MD - Chapter 42
Brent Seres, Belleville, Ontario Canada
David Shantz, Rocklin, CA - Chapter 43
Moshe Wasserman, Hermosa Beach, CA - Chapter 47

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Perry Kuhns, Pearland, TX - Chapter 105
Michael Simonds, White Bear Lake, MN - Chapter 17
Dan Stark, Lenexa, KS - Chapter 59
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Roberto Alcaraz, Fallbrook, CA
Matt Caruso, Syracuse, NY
Fuad Cuzman, Albuquerque, NM - Chapter 34
Brandon Dawson, Los Angeles, CA
Rodney Fred, Martin, TN - Chapter 103
Miguel Gonzalez, Los Angeles, CA
Kevin John, Northheim, TX
Karen Rose, Boynton Beach, FL
Timothy Williams, Kearney, NE - Chapter 87
Certified Radio Operator® (CRO®)
James Brown, Yarmouth, ME - Chapter 110
Daniel Davidson, Albuquerque, NM
Friend Weller, Logan, UT



Answer from page 3

A. 225 degrees

The current distribution affects the field. A 90-degree tower emits a field like a doughnut. Extending the element to 225 degrees ($\frac{5}{8}$ wave) flattens the doughnut, resulting in a higher field at a lower angle. Above 225 degrees, additional lobes above horizontal become more pronounced, reducing the radiated field in the horizontal plane.

Membership Drive Adds 41

Forty-one new members were sponsored through the 2015 SBE Membership Drive, which carried the theme "Get the Advantage, Join the SBE." Each member who recruited a new member was entered into a drawing to win prizes donated by several SBE Sustaining Members and the SBE.

The Grand Prize winner, who will receive an expense-paid trip to the SBE National Meeting in Madison, WI, this October, is Robin Heslop, CTO, of Davie, FL. Other prizes and winners include:

Gerald Agresti, CPBE	Leawood, KS	Heartland Video ceramic mug
Cris Alexander, CPBE, DRB, AMD	Aurora, CO	SBE tumbler
Steven Barousse, CSTE, CBNE	Washington, DC	Orban PCn 1600
Jim Bernier, Jr., CPBE, CBNE	Alpharetta, GA	Heartland Video calculator and cell phone stander
Tom Bole, CBNT, CTO	Las Vegas, NV	Tascam DR-05 from BSW
Michael Bove	Oro Valley, AZ	DVEO logoed t-shirt
Wes Boyd, CBT	Girard, OH	Thompson Video Systems long-sleeve logoed shirt
Steven Browneller	Ventura, CA	Heartland Video knit hat
Tom Dailey, CBNT, CTO	Denver, CO	Copy of SBE CertPreview
Robert Dickinson, CBTE	St.Thomas, VI	Comrex BRIC-Link II
Michael Doty	Stephens City, VA	Heartland Video ceramic mug
Joseph Durham	Vinton, VA	Heartland Video flash drive and flashlight key chain
Dennis Dutra, Jr., CBTE	Eliot, ME	Heartland Video pint glass
Gary Fullhart	Sylvania, OH	Tieline Technology barbecue set
Sam Garfield, CPBE, CBNT	Raleigh, NC	Heartland Video flash drive & flathead screwdriver
John George, Jr.	Lexington, SC	Heartland Video pint glass
James Grace, CBT	Mitchell, SD	Thompson Video Systems long-sleeve logoed shirt
Dale Harry, CPBE	Rocklin, CA	Wheatstone FM-55 digital audio processor
Ken Holden, CPBE	Fresno, CA	Heartland Video ceramic mug
Mark Humphrey, CPBE	Exton, PA	Heartland Video flash drive and flashlight key chain
Mark Jacobson, CBTE, CBNT	Streamwood, IL	Dielectric logoed t-shirt
Chuck Kelly, Jr.	Noblesville, IN	SBE membership pin
William Lee	Jenks, OK	Four Maine lobsters from Dielectric
Marc Lehmoth	Kennesaw, GA	Tascam DR-05 from BSW
Steve Mankowski, CPBE, CBNT	Palmdale, CA	Heartland Video calculator and cell phone stander
Ascencion Marquez, CEV	Bethesda, MD	Heartland Video t-shirt
Ed Martin, CPBE	Maryville, TN	DVEO logoed t-shirt
Robert McCormick, CBT	Chicopee, MA	Heartland Video flash drive and flashlight key chain
Joseph Patriss, CBT	Newington, CT	Registration to SBE University or SBE webinar
Jason Pepino, CBT	Odenton, MD	Tieline Technology logoed t-shirt
Arthur Reis, CPBE, CBNT, DRB, AMD	New Lenox, IL	Heartland Video flash drive & flathead screwdriver
Scott Richards	Halethorpe, MD	Heartland Video ceramic mug
Jack Roland, CBRE, CBNT, AMD	Wheat Ridge, CO	Dielectric logoed t-shirt
Harold Schardin, CPBE, CBNT	Forest Lake, MN	Heartland Video flash drive & flathead screwdriver
James Schoedler	Denver, CO	Thompson Video Systems long-sleeve logoed shirt
Blake Thompson, CBNT	Akron, OH	Heartland Video pint glass
Sean Torbett	Redwood City, CA	Heartland Video pint glass
Timothy Van Den Bos	Tigard, OR	Heartland Video t-shirt
Len Watson, CSBE	Chicago, IL	Heartland Video flash drive & Phillips screwdriver
Joel Williams	Northridge, CA	Heartland Video calculator & cell phone stander

Get the Advantage:



Chapter Check

Chapter 90
Southwest Florida



SBE members met in June in Ft. Myers, FL, to reorganize and restart Chapter 90 Southwest Florida. Photo by Bob Geckler.

AWARDS from p.3

chapters for growth in membership, percentage of certified members and highest average attendance at chapter meetings. These awards are based on statistics kept at the national office, as submitted by all chapters. Two awards for each category are presented, based on chapter enrollment. Class A represents chapters whose membership is less than the national median. Class B includes chapters with a membership greater than the national median.

• **Greatest Growth in New Members**

- A: Chapter 111, Huntsville, AL
- B: Chapter 45, Charlotte, NC

• **Most Certified Chapter**

- A: Chapter 118, Montgomery, AL
- B: (tie) Chapter 24, Madison, WI; Ch. 131, Inland Empire CA

• **Highest Average Member Attendance**

- A: Ch. 85, Central Western OK
 - B: Ch. 34, Albuquerque, NM
- Nominations for the 2016 awards will open in February. 🌟

Accredited SBE Frequency Coordinators

The SBE provides accreditation to broadcast auxiliary spectrum (BAS) frequency coordinators who agree to conduct their coordination using a voluntary national standard of procedures. Accreditation has been recently granted to:
Michael Celenza • Coram, NY
Chapter 15

Professional Liability Insurance Available

The Society of Broadcast Engineers now has available to members professional liability insurance coverage specifically designed for broadcast engineers and technicians who provide their services on a consulting and/or contract basis. The program is administered by the Hays Companies of Washington, DC. Premiums are based on the size and scope of the individual member's business.

This unique professional liability policy was developed with input from many members of the SBE who operate their own businesses. Several hundred members completed surveys, conducted by the SBE in cooperation with Hays Compa-

nies, to ensure that the policy developed would reflect the work and responsibilities that consulting and contract engineers typically do.

The SBE is pleased to be working with the Hays Companies of Washington, DC, part of a nationwide and international company that includes among its services a specialization in risk management and commercial insurance. The underwriter for the SBE policy is a unit of Lloyds of London. For information about the SBE Professional Liability Insurance or to get a quote, contact Henry Cifuentes at the Hay Companies during East Coast business hours at 202-263-4018 or hcifuentes@hayscompanies.com. 🌟

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4K



LEGAL PERSPECTIVE

By Chris Imlay, CBT
SBE General Counsel
cimlay@sbe.org

Wireless Mics and the Spectrum Juggle

I have written before about the FCC's constantly changing plan for accommodating wireless mics in the face of the impending incentive auction and the loss for broadcast auxiliary use of the entire 600MHz band. The FCC was not concerned about wireless microphones when the 700MHz band was reallocated, because of the supposed continued availability of the 600MHz band for wireless mics and TV white spaces devices. When the incentive auction came along, the FCC promised two reserved channels for wireless mics on either side of Channel 37. That was subsequently revoked, and broadcasters were promised 4 of the 11 megahertz in the "duplex gap" between the uplink and downlink broadband segments in the 600MHz band, but that promise has eroded as well with the FCC's intent to allow displaced TV stations and unlicensed white spaces devices in that gap. On June 16, 2015, the FCC released a notice of proposed rule making in docket 15-146 proposing to reserve a single UHF TV channel at or above channel 21 for use by wireless mics and white spaces devices. So there is no UHF TV band spectrum reserved for wireless mics. Not good for breaking news, sports, and large event production anywhere.

Since September 2014, the FCC has had

open a notice of proposed rule making in Docket 14-166, which proposes to allocate bands outside the UHF TV band for wireless mics. While this is a positive step, there is no vacant spectrum in any band between VHF and the millimeter-wave bands, so any of the replacement bands under consideration will necessitate some inter- or intra-service sharing with wireless mics. That will in turn require frequency coordination in real-time or near-real-time.

Action Steps

The SBE met with manufacturers of wireless mics at the 2015 NAB Show to discuss the options for replacement bands. It was apparent that, of the bands under consideration for wireless mic operation going forward, two options are of principal interest to the manufacturers: the 941-960MHz band and the 1435-1525MHz band.

The real problem in putting wireless mics in the 941-960MHz band is that the 944-952MHz segment has a large number of fixed aural STLs. To protect incumbents from wireless mic interference, there would have to be increased coordination with SBE frequency coordinators and better ULS license data. The ULS database doesn't have accurate receive-site data. Also, it is difficult to coordinate co-channel,

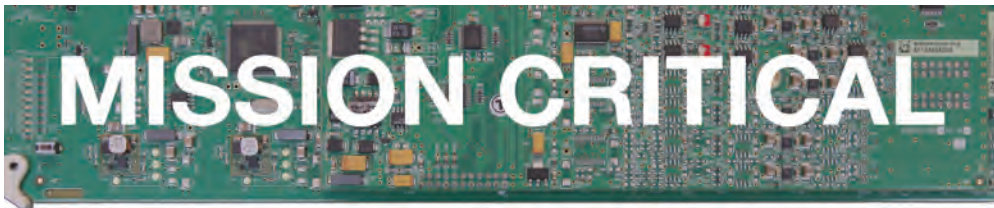
fixed point-to-point STLs and itinerant mobile operations such as wireless mics that require real-time coordination. The home channel plans make some real-time coordination possible. So that is one option.

As to 1435-1535MHz, the band is allocated to flight test telemetry. Video production companies rely on this spectrum for COFDM video channels for special events and sports on an STA basis. It is problematic for new wireless mic operation to protect flight test without some sort of GPS technology incorporated in the mics to avoid interference to flight tests. However, the band is used now for wireless mics now in some locations by STA for events such as golf and horseracing. So, with some caveats, this band might be used as well for reaccommodation of displaced UHF wireless mics.

There is a 39-month transition time for the transition process to occur, so there is at least some time to re-establish wireless mics in one or several replacement bands.

In late June, the SBE accompanied a large group of interested wireless mic users for meetings at the FCC with Chairman Tom Wheeler, and OET and Wireless Bureau staff about the future of wireless mic operation at UHF and elsewhere. Among the many points made in meetings that lasted all of one afternoon, the group noted that one of every two microphones sold is a wireless mic and the demand for wireless audio is exponentially increasing. At a recent golf tournament for example there were more than 200 WMs in use. Latency precludes broadband solutions for wireless mics. News events have a public safety component, and the loss of spectrum at 700MHz, and now 600MHz jeopardizes this. We asked for a "safe harbor" for breaking news, on-stage performances and other live, "critical use" events until all transitional issues are firmed up. If there is impairment of access to the 4MHz duplex gap, there is no way to get critical news to the public, including public safety personnel. And there is no ability to share that segment with white space devices and protect breaking news events.

There are other replacement bands under consideration, including 2020-2025MHz, one channel in the 7GHz BAS band, and the bands above 10GHz. Stay tuned.



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FOCUS ON SBE

By John L. Poray, CAE
SBE Executive Director
jporay@sbe.org

A Top Ten List To Aspire To

There are a number of ways to gauge the vitality of a chapter of the SBE. The number of active members and how many quality meetings held each year are two ways that are often used. Another is to measure the percentage of SBE members in each chapter that hold one or more SBE certifications.

can be helpful to you in your own professional development. Your chapter's certification chairman can help you get started and answer any questions you may have. You can also check the Certification section at the SBE website, www.sbe.org, or contact SBE Certification Director Megan Clappe at the SBE National Office.

Rank	Chapter	% SBE Certified	Chapter Chairman	Certification Chairman
1	118, Montgomery, AL	68%	Wiely Boswell, CBRE, CBNE	Charles Grider, CBRE, CBNT
2	131, Inland Empire, CA	67%	Don Bartie, CPBE, CBNT	Paul Claxton, CPBE, CBNE
2	24, Madison, WI	67%	Kevin Ruppert, CPBE, CBNT	Jim Hermanson, CPBE, CBNT
4	86, Greenville, SC	63%	Jerry Massey, CPBE, 8-VSB, AMD, DRB, CBNT	Robert Maw, CSTE
5	55, St. Louis, MO	62%	Terrence Dupuis, CBRE, CBNT	Don Strauss, CPBE
6	52, Central Ohio	55%	John Owen	Roland Elikofer, CPBE
7	28, Milwaukee, WI	54%	Todd Boettcher, CPBE	Rick Ryan, CPBE
7	3, Kansas	54%	Vern Wirka, CPBE	Robert Locke, CPBE, CBNT
7	96, Rockford, IL	54%	Ben Pflederer	Chuck Ingle, CPBE, AMD
10	7, Jacksonville, FL	51%	Craig Butler, CSRTE	Alan Alsobrook, CSRE, AMD, CBNT
11	102, Grand Rapids, MI	50%	Glenn Gunnufsen, CSTE, CBNT	Philip Schmitt, CBRE, CBT

Though SBE certification is an optional program, we of course recommend it highly. It is the most recognized measure in the broadcasting business today of technical knowledge and experience. I took a look at SBE chapters that meet the requirements to be a SBE Quality Chapter (who earned a chapter cash rebate from the national SBE for 2014) AND, that had 50% or more of its members certified through the SBE, and created a "SBE Top Ten" list; or in this case, Top 11.

During this 40th anniversary of the SBE Program of Certification, we're pleased to recognize the Top 11 Chapters, their chairmen and certification chairmen, who play a significant leadership role in establishing a high level of chapter programming and a high percentage of member participation in the SBE certification program.

No matter what stage you are in your career as a broadcast engineer or master control operator, obtaining SBE certification



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The trust offers scholarship and educational programming and grants that benefit broadcast engineering and the broadcast engineer. Submit tax-deductible donations, payable to the Ennes Educational Foundation Trust, to the Society of Broadcast Engineers, 9102 N. Meridian St., Suite. 150, Indianapolis, IN 46260.

THANKS TO THE FOLLOWING SUPPORTERS FOR THEIR CONTRIBUTIONS

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Engineering Perspective

By Alan Jurison, CPBE, AMD, DRB, CBNE
AlanJurison@iHeartMedia.com

Senior Operations Engineer, iHeartMedia, Engineering and Systems Integration Group

HD Radio and Diversity Delay

If you attended the 2015 NAB Show or you've seen the advertisements and product highlights that usually follow the convention, you may have noticed a lot of products are starting to offer features regarding the automatic measurement and correction of HD Radio Diversity delay. In the coming months and years, the industry is going to learn a great deal about this issue. The executive summary? It's far more complex than any of us could have imagined. I encourage those who maintain stations with HD Radio to take a close look at these solutions, their own stations, and explore how we might all work together to finally settle this problem. Millions of new HD Radio receivers are sold annually and will soon become the primary automotive receiver used by our listeners. It's critically important that we get this right.

The hybrid digital and analog broadcasting solution deployed in the United States, FM and AM IBOC, more commonly known as HD Radio, allows simultaneous transmission of broadcast radio signals in both the analog and digital domains. One of the key components of this system is that receivers can immediately acquire the analog signal and then transition (or blend) into the digital signal after it has acquired and buffered. The transition process of the audio from analog to digital is called blending.

As broadcasters, to make this blend seamless and transparent to our listeners, we have had to employ delays on our analog AM and FM signals to match the digital signal. This delay is typically called "diversity delay."

In the first- and second-generation of HD Radio hardware, this delay often was in the same device producing the digital signal. However, as time went on, engineers demanded flexibility in configuration, reduction of hardware costs, and reducing points of failure (the first two generations of hardware weren't particularly reliable). The most common deployment of HD Radio systems came in third generation and

recently introduced fourth generation hardware, and these systems divided the functions of that single device into two devices, the Exporter and the Exciter.

As a station-level engineer, ever since I got my hands on an Exgine system, which

tion of network traffic, and design of the E2X link, location of the Exporter and the Exciter and the latency or jitter on the data link it traverses, component aging and failures, separate audio processors, and more. And did you know that if you reboot your Exporter or Exciter they often will come up with a slightly different delay than they had before the reboot? There are many factors that can cause a stations' digital or analog chain transmission timing to change, which in turn can cause diversity delay/blend time alignment problems for our listeners.

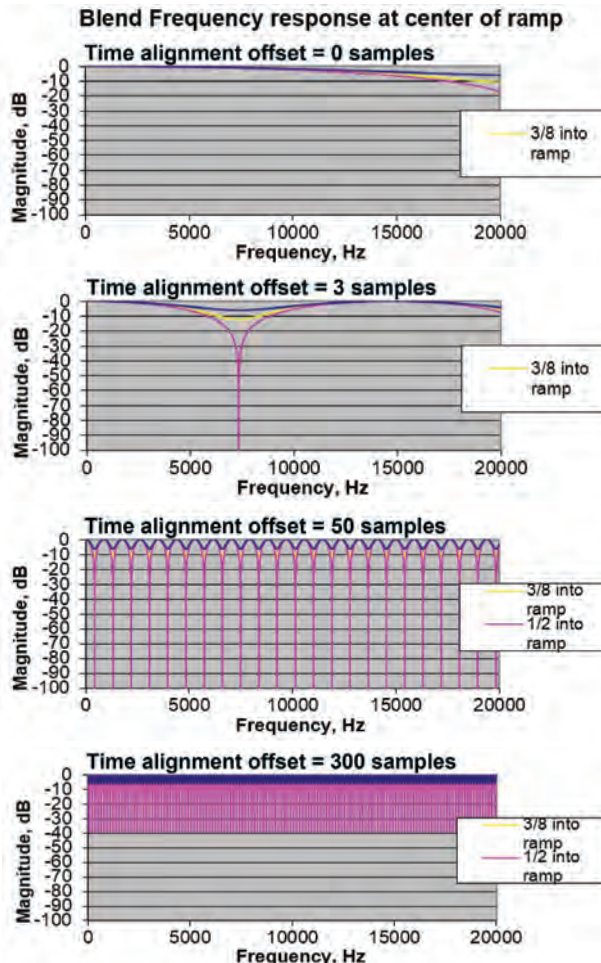
The important point: It's impossible to keep your radio station's diversity delay perfectly aligned through manual means. If you don't have a delay measurement device, it's also nearly impossible to know the precise amount of delay needed on a station. You should seek a way to accurately measure and correct the delay automatically.

For me, this subject has been my passion ever since the introduction of the Exgine HD system. We are learning new things each day about this problem. While research is ongoing, in the future, I will be sharing some of our findings through a series of educational outreach initiatives. It will take time to build this content. In the meantime, I encourage SBE members to become part of the conversation. Do your own research in this area, start exploring the products and features to understand the problem, and how you can fix it. As you find solutions that work, tell your colleagues and spread the word. If you find solutions you don't like, make sure you communicate that clearly to the vendor so it can improve its efforts. It's going to take the work of the entire radio industry to get it right, and we owe it to our listeners to do such.

Jurison also chairs the NRSC RDS Usage Working Group (RUWG). His opinions are not necessarily those of iHeartMedia, the NRSC, or the SBE. Graphs courtesy of iBiquity.

MORE ONLINE

Want to know more? Access the SBE on-demand webinar on HD Radio at sbe.org/webinars.



The audible effects of Diversity Delay errors in the audio chain.

is now in its 10th year of being production hardware, keeping the analog diversity delay perfectly aligned with the digital was one of the most challenging things I had ever experienced. Speaking to my other colleagues, I wasn't alone. But, as it turns out, recent precision tools available in the last few years have told us that there is still a long list of items that can cause diversity delay drift on your radio station. Incompatible software/firmware loads, improper configuration of the hardware, poor isola-

305 Broadcast • 2015 Anthony Gervasi Broadcast Equipment Supplier 855-305-3058	Digital Alert Systems, LLC • 2005 Bill Robertson Emergency Alert Systems 585-765-1155	Maxell Corporation of America • 1991 Patricia Byrne Data/Broadcast Video Media 973-653-2423	Shively Labs • 1996 Dale Ladner FM Antennas & Combiners 888-SHIVELY
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American Tower Corporation • 2000 Peter A. Starke Development/Construction/Management 781-461-6780	Drake Lighting • 2015 Dave Sheppard FAA Obstruction Lighting - High Intensity 270-804-7383	Middle Atlantic Products • 2005 David Amoscatto Networking & AV Construction 973-839-1011	Signiant • 2012 Steve Gillen Signiant Content Delivery Software 781-221-4000
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A-Ware Software/MusicMaster • 2014 Shane Finch Advanced Music Scheduling Solutions 352-351-3625	ERI - Electronics Research • 1990 David White Broadcast Antennas, Transmission Line, Filters/Combiners, Towers and Services 812-925-6000	Nautil Inc. • 2002 Jeff Welton Radio Broadcast Transmitter Manufacturer 877-662-8835	TC Electronic • 2008 Laura Davidson DTV Audio Level Processing 818-665-4902
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Blackmagic Design • 2012 Terry Frechette Switchers, Digital Cameras, Routers 978-337-0991	Fujinon, Inc. • 1986 Thom Calabro Broadcast & Communications Products 973-633-5600	Pacific Radio • 2013 Josh Phillips Cables, Connectors, Tools, Racks 818-556-4177	Teradek • 2011 Jon Landman Camera-top ENG Solutions 949-743-5783
Bracke Manufacturing LLC • 2012 Patra Largent RF & Microwave Components 949-756-1600	GatesAir • 1977 Dave Hopson (TV) Mark Goins (Radio) Broadcast Equipment Manufacturer 513-445-5243 513-899-9124	Pasternack Enterprises • 2001 Christine Hammond Coax & Fiber Products 949-261-1920	Terrestrial RF Licensing Company • 2003 Jennifer Smith FCC Broadcast Auxiliary Licensing Services 888-373-4832
Broadcast Electronics Inc. • 1978 Tom Beck Radio Equipment Manufacturer 217-224-9600	Geppo/General Cable • 1995 Dennis Thompson Innovative Cabling & Custom Solutions 407-405-0756	Potomac Instruments • 2012 Guy Berry RF Measurement Equipment Manufacturer 301-696-5550	The Durst Org. - 4 Times Square • 2004 John M. Lyons, CPBE TV/FM/Microwave Tower Site 212-997-5508
Broadcast Microwave Services Inc. • 1997 Jim Kubit Manufacturer, Transmitters, Receivers, Antenna Systems 805-581-4566	Graham Brock, Inc. • 2012 Marilyn Matherly Technical Consultation - Radio/TV 912-638-8028	ProAudio.com - A Grouse-Kimzey Co. • 2008 Mark Bradford Proaudio Broadcast Equipment Distributor 800-433-2105 x560	The Switch • 2011 Peter Hartz Fiber Transmission Provider 323-645-8011
Broadcast Supply Worldwide • 1986 Shannon Nichols Audio Broadcast Equipment Supplier 800-426-8434	HD Radio/iBiquity Digital • 2014 Rick Greenhut HD Radio Technology 443-539-4335	Propagation Systems Inc. - PSI • 2010 Doug Ross Quality Broadcast Antenna Systems 814-472-5540	Thomson Video Networks • 2014 Matt Tietze Video Compression and Processing 301-537-6288
Broadcasters General Store • 2004 Buck Waters Broadcast Audio Video Distributor 352-622-7700	Heartland Video Systems, Inc. • 2011 Dennis Klas Systems Integrator 920-893-4204	ProAudio.com - A Grouse-Kimzey Co. • 2008 Mark Bradford Proaudio Broadcast Equipment Distributor 800-433-2105 x560	Tieline The Codec Company • 2003 John Lackness POTS, ISDN, Codecs & A/V Products 317-845-8000
Canon USA Inc. • 1985 Larry Thorpe Broadcast Lenses & Transmission Equipment 800-321-4388 201-807-3300	IIEWC • 2014 Matt Granard Global Connectivity Solution Provider 425-286-1900	Quintech Electronics and Communications Inc. • 2002 James Herbstritt State-of-the-art RF Hardware Solutions 724-349-1412	Tower Engineering Company • 2013 Madison Batt Tower Engineering Analysis & Design 425-640-2266
Cavell, Mertz & Associates Inc. • 2011 Gary Cavell Consulting Services 703-392-9090	Integrated Microwave Technologies • 2009 Elena Waldhuber Microwave Video Transmission and Receive Systems 908-852-3700	QVC • 2011 Kevin Wainwright Multimedia Retailer 484-701-3431	Unimar Inc. • 2001 Thad Fink Tower Obstruction Lighting Designer, Manufacturer, Distributor 315-699-4400, 813-943-4322
Comark • 2013 Jack McAnulty Manufacturer Broadcasting Transmission Equipment 860-763-1100	Inovonics Inc. • 2012 Lukas Hurwitz Radio Broadcast Equipment 831-458-0552	Radio Frequency Systems • 2015 Jay Martin Broadcast & Telecom Antennas & Systems 207-523-0990	Vislink Broadcast • 1991 Mark Tommey Video Microwave Systems 978-671-5700
Comrex Corporation • 1997 Chris Crump Audio Codecs & Telephone Interface Products 978-784-1776	JAMPRO Antennas Inc. • 2011 Alex Perchevitch DTV/DVBT & HD Radio-IBOC Solutions 916-383-1177	RCS • 2003 Diana Stockey Audio and Video Content Management 308-284-3007	Volicon • 2015 Russell Wise Broadcast Monitoring and Logging Solutions 781-221-7400
Comsearch • 2004 Tim Hardy Frequency Coordination Services 703-726-5651	JVC • 2014 Lon Mass Professional Video Products 973-317-5117	RDL • 2004 Chuck Smith Audio, Video, Control & Test Equipment Manufacturer 928-778-9678 x142	Wheatstone • 2010 Jay Tyler IP Consoles, Routers & Processors 252-638-7000
Continental Electronics Corporation • 1976 Michael Troje AM & FM IBOC Transmitters 800-733-5011	Ka Yu Systems • 2011 George Gimourginas Audio, Video, IP - Satellite 301-585-4302	RF Specialties Group • 2008 www.rfspecialties.com Everything from the Microphone to the Antenna 613-228-0688	WideOrbit • 2012 Brad Young Broadcast Management Software, Automation and Master Control 214-923-6337
CueScript • 2014 Michael Accardi Teleprompting Software & Hardware 203-763-4030	Kathrein USA Inc. • 1985 Michael W. Bach Antennas for Broadcasting & Communications 541-779-6500	Rohde & Schwarz • 2003 Walt Gumbert Broadcast Transmitters, Test & Measurement 724-693-8171	Wireless Infrastructure Services • 2006 Travis Donahue Broadcast Microwave, Tower & ENG Installation, Integration Maintenance Services 951-371-4900
Dakota Lighting Supply • 2015 Randy Doremus FAA/Obstruction Lighting Products 303-748-6241	LBA Technology Inc. • 2002 Katie Sneed AM/MW Antenna Equipment & Systems 252-757-0279	Ross Video Ltd. • 2000 Darren Budrow Manufacturer, Television Broadcast Equipment 613-228-0688	WnewTech Corporation • 2014 Luiz Santiago Systems Integration 310-220-5664
Davicom, Division of Comlab, Inc. • 2014 Guy Fournier Site Remote Controls 418-682-3380	LYNX Technik • 2007 Steve Russell Broadcast Terminal Equipment Manufacturer 661-251-8600	Sage Alerting Systems Inc. • 2010 Gerald LeBow Emergency Alert Systems Products 914-872-4069 x210	
DEVA Broadcast • 2015 Todor Ivanov Monitors, IP Audio Codecs, Broadcast Tools 305-767-1207	Markertek Video Supply • 2002 Andrew Barth Audio, Video, AV Broadcast Supply 845-246-3036	SCMS Inc. • 2000 Bob Cauthen Broadcast Equipment- New/Used 800-438-6040	
Dialight Corporation • 2006 US Headquarters FAA Obstruct. Lighting, LED Based 732-919-3119		Seacom Erectors, Inc. • 1997 John Breckenridge Tower/Antenna Erections 360-793-6564	
Dielectric • 1995 Cory Edwards TV & FM Transmission & Cellular Products 207-655-8131		SEG • 2014 Chris Childs Supply Chain Products and Services 913-324-6004	

Members With 25 or More Years of Membership
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Member Spotlight: Frank Giardina

Member Stats

First Joined the SBE: 1985

Certifications: CPBE

Chapter: 68, Birmingham, AL, charter member

Employer: Cumulus Media

Position: Director of Engineering/IT, Birmingham market

Location: Birmingham, AL

I'm Best Known For: My knowledge of the market's history since I have been in Birmingham radio for more than 45 years.



Giardina assembling a telescope that was a Christmas present to his grandson.

Q. What do you enjoy or value most about your SBE involvement?

A. Monthly meetings with informative guests and getting together with the other area engineers. The sharing of knowledge, gained through experience by the members.

Q. What got you interested or started in broadcast engineering?

A. During my grammar school days, our family would take summer trips to Panama City, FL, to visit an uncle who was an engineer at Channel 7 TV in Panama City. Instead of spending time on the beach, I would go to work with him and hang around the TV station,

which was collocated with a radio station. I learned to run TV master control, and I asked tons of questions about the workings of the transmitters and studio equipment.

Q. What do you find most satisfying in your job?

A. The constant change in technology, but also teaching others the basic radio engineering skills. I am one of the instructors for the Alabama Broadcasters Association Engineering Academy, the brain child of Larry Wilkins. This is a free-of-charge, one-week school where people

interested in broadcast engineering come to learn the basics. At the end of the course they have the opportunity to take the SBE CRO or CBT certification exam.

Q. When I'm not working I...

A. My favorite hobbies are ham radio (WA4FG), photography and restoring antique radios.

Q. Tell us something others may not know about you.

A. My first job in radio was not in engineering, but in programming. In the late 1960s I was program director of the Birmingham radio station where the two morning DJs (who were also the station owners) decided to ban the Beatles. I learned about it driving in to work that day. The story went nationwide, and to this day I am still asked about it. I was interviewed in 2013 by the BBC for a special program concerning the "Beatle Ban."

Q. What's your favorite gadget?

A. Any test equipment from old GR bridges to the new pocket antenna analyzers.

WELCOME TO THE SBE

NEW MEMBERS

Warren Allgyer - Gnadenhutten, OH
 Ron Anderson - Larkspur, CO
 Denis M. Barriault - Thunder Bay, ON
 Bill Beam - Kendall Park, NJ
 Michael Boulier - Beaverton, OR
 Jesse W. Coggins - Dacula, GA
 Anica R. Colbert - Fort Myers, FL
 Jacob C. Creek - Fayetteville, NC
 Wesley V. Crenshaw - Lake Dallas, TX
 Brian Curry - Northbridge, MA
 Jason R. Dillard - Tulsa, OK
 Joshua D. Fosse - Laredo, TX
 Joseph R. Garcia - Madison, IL
 Daniel L. Guild - Cape Coral, FL
 Nicholas E. Hallas - Clifton Park, NY
 Edwin C. Hamilton - Kennesaw, GA
 Kent S. Hatfield - Webster, NY
 David N. Haughn - Indianapolis, IN
 Charles M. Horvath - West Orange, NJ
 Klonaris Ingram - Hoover, AL
 Robert Jones - Collingswood, NJ
 LaDarren LaBlue - San Diego, CA
 Vernon A. Linnemann - Copperas Cove, TX
 Charles Longfellow - Fort Worth, TX
 Jim McGowan - Toms River, NJ
 Kyle McGuire - Puyallup, WA
 Chris Morgan - Higganum, CT
 Gavin Nex - Sherman Oaks, CA
 Erik Pedtke - Chicago, IL
 James R. Sohl - Nogal, NM
 David A. Turecki - Thunder Bay, ON
 Joshua H. Wells - Natchez, MS
 Emma L. Williams - Glenn Dale, MD
 Eric R. Wright - Marietta, GA

RETURNING MEMBERS

Francis J. Anderl - Minneapolis, MN
 Kenneth J. Boyd - Stillwater, OK
 Mitchell W. Bunda - Calgary, AB
 Jonathan Charry - Hyattsville, MD
 Kelley D. Clark - Williams, OR
 Charles F. Daniels - Helotes, TX
 Ray E. Devine - Woodlyn, PA
 Brian E. Dugger - McDonough, GA
 Manuel A. Ferreira - Livingston, NJ
 Christopher N. Furphy - Gilbert, AZ
 Andrew Gladding - Brooklyn, NY
 Pete A. Gonzalez - Boerne, TX
 Michael Z. Goodman - Lexington, MA
 Jonathan M. Hardee - Greensboro, NC
 Frederick Hoffmann - Corpus Christi, TX
 Kelvin Howard - Midway, FL
 Oscar L. Hunt - San Diego, CA
 Allen D. Kass - Richmond, VA
 Kent Loney - Lewisville, TX
 Mario A. Magana - Seattle, WA
 Daren M. McMullin - Roseville, CA
 Robert A. Meuser - New York, NY
 John J. Mulhern - Liberal, KS
 Tomas Ortiz - Pembroke Pines, FL
 Michael S. Ridley - Welland, ON
 David R. Riffle - Rohnert Park, CA
 David Rodriguez - Cleveland, OH
 Erwin N. Roman - Memphis, TN
 Oscar D. Romay - Mount Clare, WV
 Thomas P. Romero - Reno, NV
 Ralph L. Sitton - Virginia Beach, VA
 Edward P. Stofferahn - Zimmerman, MN
 Ronald L. Thompson - Long Beach, CA
 Nelo D. Toriaga - Valatie, NY
 Adam S. Truax - West Lafayette, IN
 Kevin G. Wright - Buffalo, NY

NEW STUDENT MEMBERS

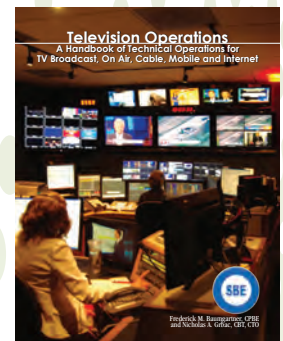
John G. Bowers - San Luis Obispo, CA
 Yam Chak Choi - Hong Kong, China
 Derek L. Clark - Calgary, AB
 Danielle C. Duguay - Calgary, AB
 Joel Fabiiian-Waddell - Calgary, AB
 Nilton M. Faria - Calgary, AB
 Pamela Glenn - Calgary, AB
 Francis J. Guanezo - Calgary, AB
 Ho Jin Hau - Hong Kong, China
 Stacie Honecker - Three Hills, AB
 Gavin B. Howard - Calgary, AB
 Aaron Kerr - Cochrane, AB
 Stephanie A. Knight - Hampton, GA
 Leah M. Koeppenick - Burnaby, BC
 Matthew P. Lysak - Calgary, AB
 Timothy Mooney - Calgary, AB
 Barbara Seals - Pasadena, MD
 Preetinder Sidhu - Calgary, AB
 Jose-Mari M. Singson - Calgary, AB
 Fraser P. Stott - Calgary, AB
 Coleton Sweep - Calgary, AB
 Daniel Westover - Calgary, AB
 Ryan D. Wilson - Calgary, AB
 Kin Lok Yau - Hong Kong, China
 Reid M. Zingel - Calgary, AB

RETURNING SENIOR MEMBERS

Anthony A. Gervasi - Miami, FL

New at the SBE Bookstore

Television Operations: A Handbook of Technical Operations for TV Broadcast, On Air, Cable, Mobile and Internet

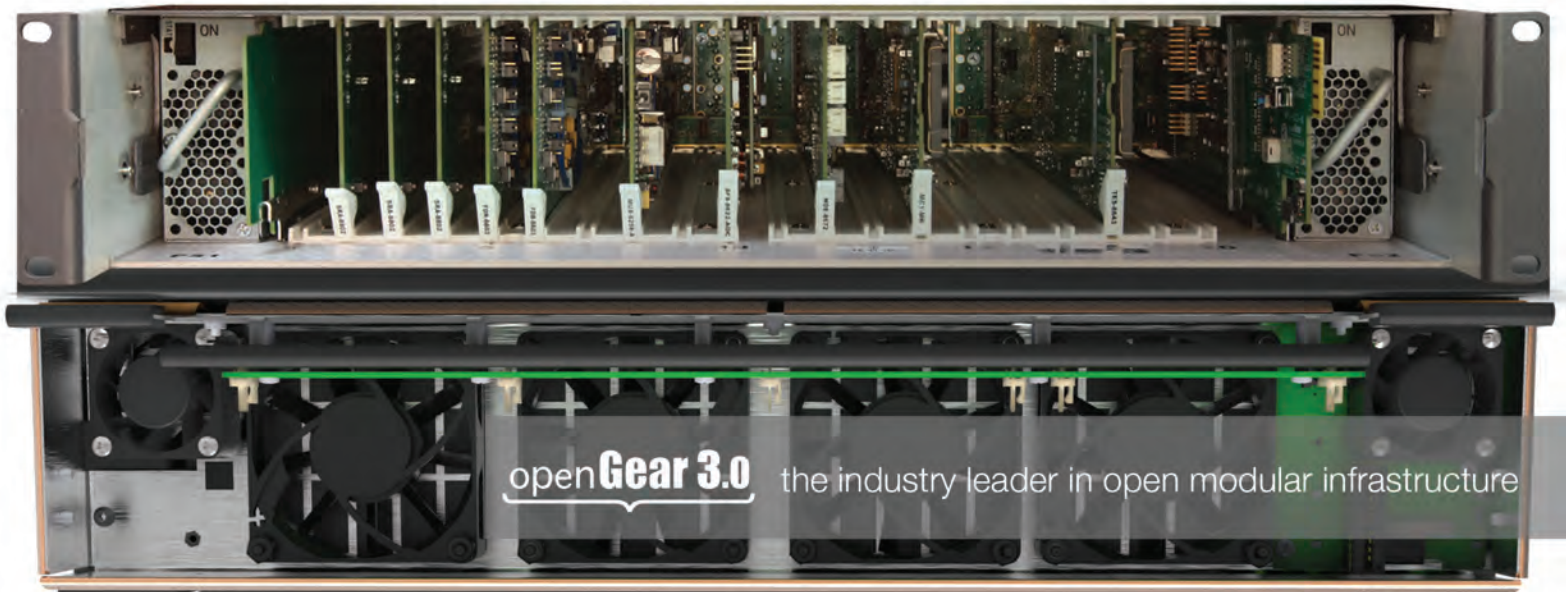


By Fred Baumgartner, CPBE; and Nic Grbac, CBT, CTO

Covers the basics of TV master control operation concepts, practices and regulations.

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MEMBERS ON THE MOVE



▶ **Mark G. Fehlig, P.E., CPBE, 8-VSB, CBNT**, is now senior engineer RF spectrum at Osborn Engineering.



▶ **David Williams, CBTE**, is now a consulting engineer offering broadcasters RF equipment installation and maintenance services.

▶ **Paul Brenner** is now chief engineer at KSDK-TV, St. Louis.

▶ **Jon Garrison, CBT**, is chief engineer at Moody Radio South Florida.

▶ **Bill Harris, CPBE, AMD, CBNT**, is the owner/principal at Entertainment and Broadcast Services.

▶ **Tim Boling, CBT, CBNT**, has been named the senior director of engineering at WRTV/The Indy MC Hub at E. W. Scripps, Indianapolis.

▶ **Steve Tuzeneu, CBT**, has become a network staff engineer with the Bible Broadcasting Network in Charlotte, NC.



Have a new job? Received a promotion? Let your fellow SBE members know. Send your news to Chriss Scherer at cscherer@sbe.org.

MARK YOUR CALENDAR

SBE Certification Exams

Local Chapters
Aug. 7 - 17, 2015 sbe.org/certification
Application deadline is closed.

SBE National Election Polls Close

electronic or mail voting
Aug. 20, 2015

SBE National Meeting

Wisconsin Broadcasters Clinic
Oct. 13 - 14, 2015

SBE Certification Exams

Local Chapters
Nov. 6 - 16, 2015 sbe.org/certification
Application deadline is Oct. 2, 2015.

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